



MINI ES

User Manual

P30B3-AU-R2

Content

1. Introduction	1
1.1 Brief description	1
1.2 Product Composition	2
1.3 Functions	3
1.4 System modes	4
1.5 Standards and directives	6
1.6 About this manual	6
1.7 Abbreviations	8
1.8 Attached list	8
1.9 Specification	8
2. Safety Requirements	9
2.1 Responsibilities of the installer	9
2.2 Battery Maintenance	10
2.3 Requirements for the installation location	12
2.4 Safety signs on the device	12
2.5 Safety equipment	13
2.6 Basic safety information	13
3. Technical Description	18
3.1 Scope of supply	18
3.2 Nameplate introduction	18
3.3 System overview	19
3.4 Overview of functions	20
3.5 Product Introduction	24
4. Monitoring instruction	30
4.1 How to install APP	30
4.2 Register an account on APP	31
4.3 Register account on the website	32
5. Daily Maintenance Methods	33
5.1 Common faults	33
5.2 Display status query table of panel button indicating lamps	34
5.3 Routine maintenance	34
6. About BYD	35

1. Introduction

Dear customer:

Thank you very much for purchasing the MINI energy storage system supplied by BYD Auto Industry Company Limited. We sincerely believe that our products meet your needs. We value your feedback on the product performance and function and we strive to continually improve our product.

1.1 Brief description

MINI ES is an energy storage system which can store and distribute excess energy generated by PV (photovoltaics) systems. It can be used to minimize solar export for customers as much as possible.

Note: It is recommended to use MINI ES to cooperate with an existing PV system

An overall structure diagram in house is shown as below:

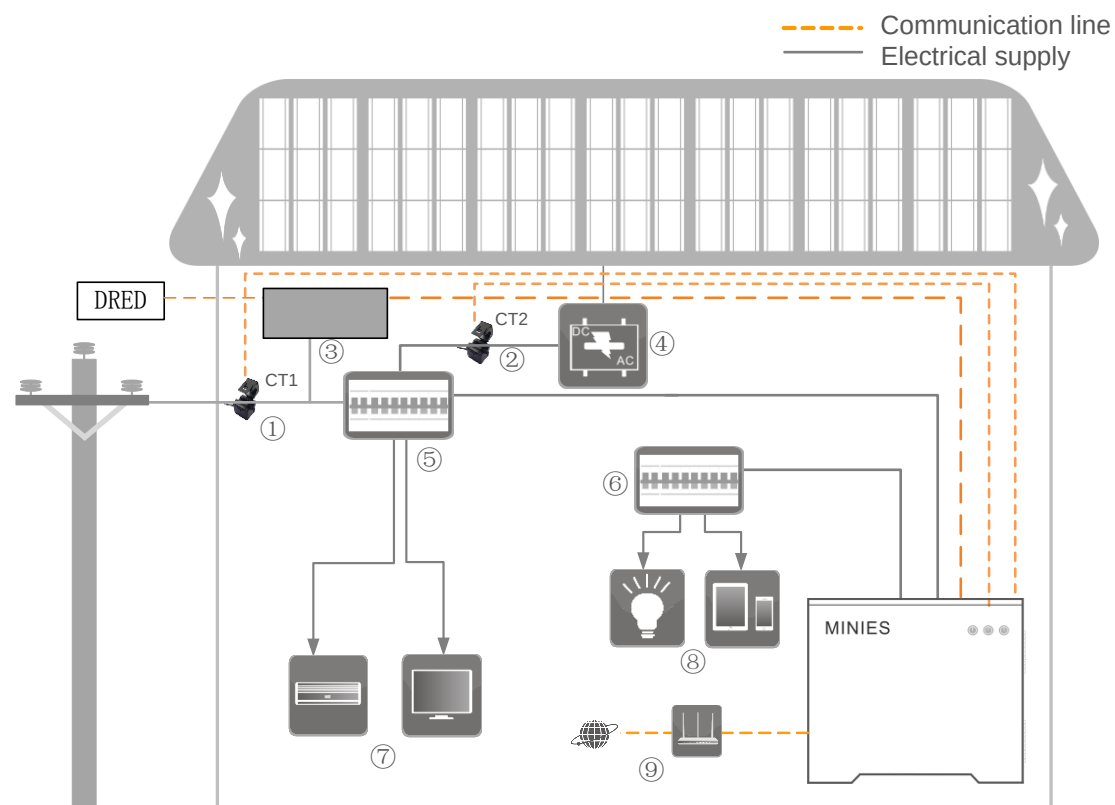


figure1. Overall structure diagram

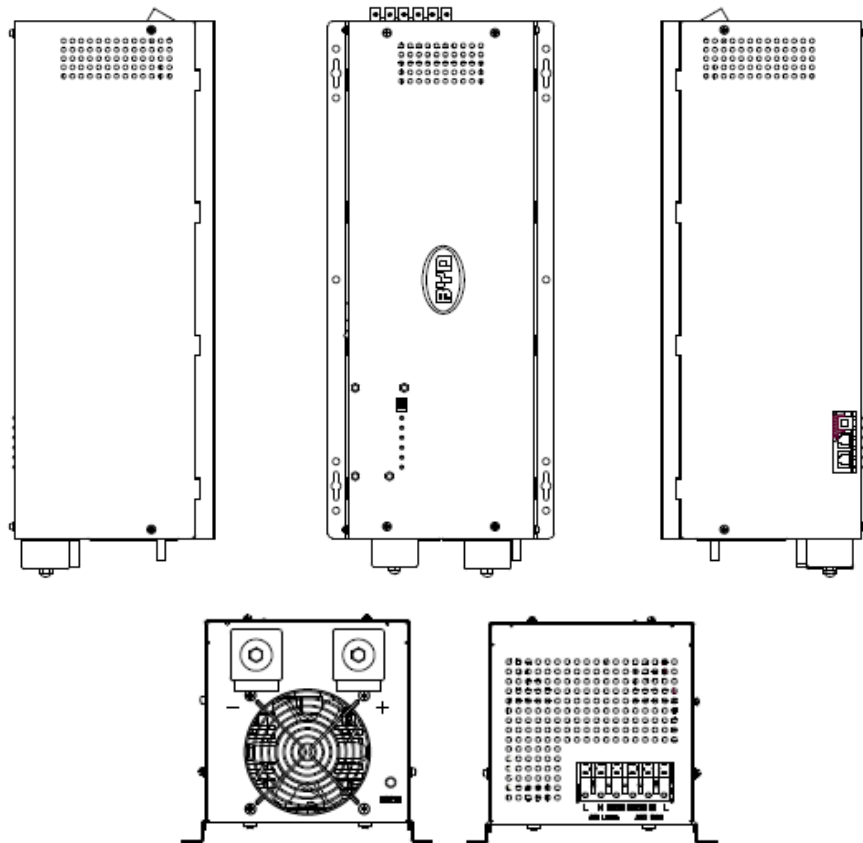
Number	Name	Description
①	CT1 (Current Transducer)	Collects the current of house grid
②	CT2 (Current Transducer)	Collects the current generated from the PV system
③	DRED receiver	Transfer the demand signal from the Grid to the MINI ES
④	Photovoltaic inverter	Inverts the direct current generated from PV to alternative current to supply the load

Number	Name	Description
		demand
⑤	General load distribution board	Used to connect general load, grid, PV inverter and the “GRID” terminal of the MINI ES
⑥	Essential load distribution board	Connects to “LOAD” terminal in MINI ES
⑦	General load	High power electric appliances
⑧	Essential load	Essential single phase electric appliance When grid power is off, MINI ES will supply essential load circuit
⑨	Router	Uploads the data of MINI ES

1.2 Product Composition

MINIES is mainly composed of pcs and battery.

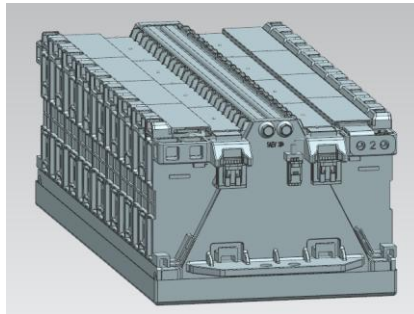
➤ PCS



PCS Parameters	
DC Nominal Voltage	51.2VDC
AC Maximum Power	4140W
AC Nominal Power	3000W
AC grid Voltage	230V
Maximum Discharge Current	13A

AC grid frequency	50HZ
Nominal Voltage	230V
Total Harmonic Distortion	<4%
Topology	Transformer
IP Grade	IP20
Size (W×H×D)	26KG
Weight(Net Weight)	204.5 x 231 x 578.8mm
Operation Temperature	-25~+45℃
Storage Temperature	-40~+70℃

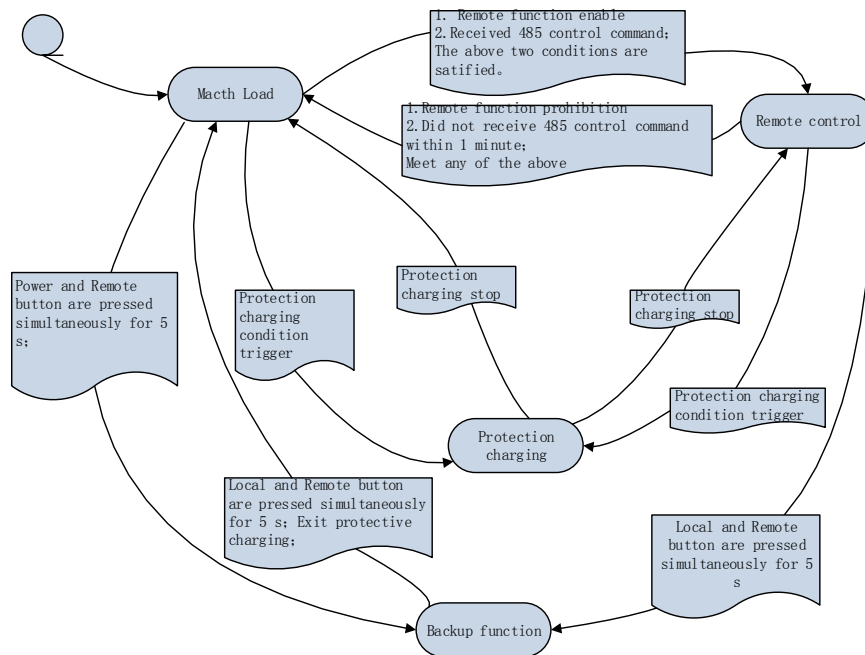
➤ Battery



Battery Parameters	
Nominal Voltage	25.6V
Capacity	75Ah
Energy	1.92Wh
Mechanical characteristics	
Thickness	139±2mm
Width	189±2mm
Length	458.5±2mm
Weight	<20Kg
Electrical characteristics	
Charge Method	CC/CV/CP
Charge Current	37.5A (Standard)
	75A (Max. Continue Current @ 25℃)
Charge Cut-off Voltage	3.60V/Cell
Discharge Method	CC/CV/CP
Discharge Cut-off Voltage	2.80V/Cell
Discharge Current	37.5A (Standard)
	75A (Max. Continue Current @ 25℃)

1.3Functions

Functions of the MINI ES system are shown as below:



- When grid power is unavailable, supply power to essential loads, such as computer, TV general lighting.
- It has local and remote control function. Local control is default mode and remote control is accessible for certified installer.
- System supplies APP software, which enables customer to view the system data online or from a smart phone.

1.4 System modes

MINI ES works in self-consumption mode which maximise energy saving for you.

➤ Self-consumption mode

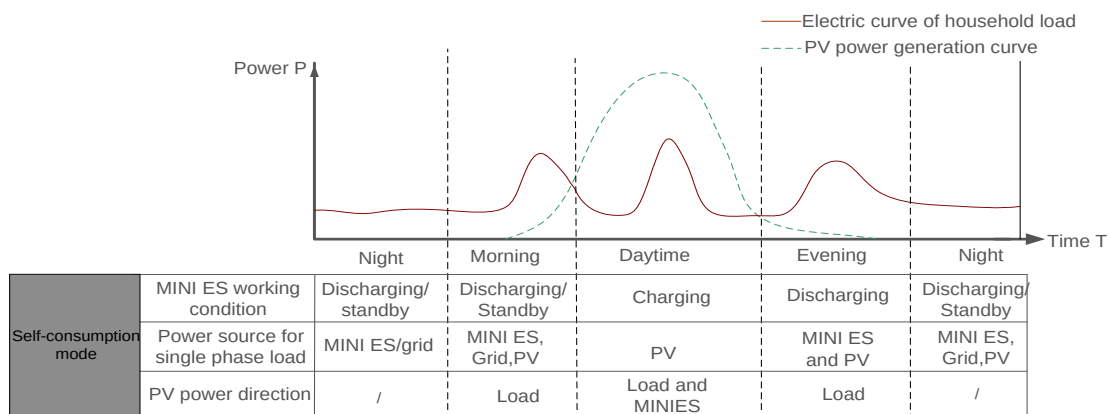


figure2. Power curve of a sample day

➤ Demand Response Mode (DRM)

MINI ES that cooperates with DRED controller could receive the demand signal from

the Grid to connect or disconnect with the Grid and limit power of charging or discharging.

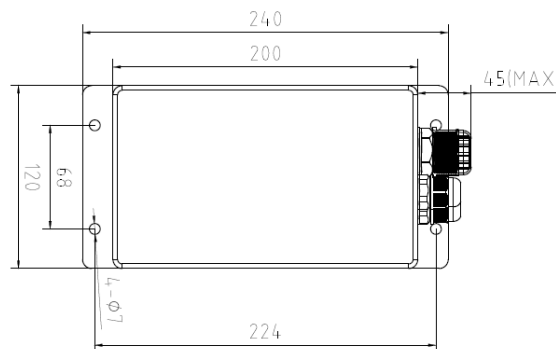


figure3. Dimensional drawing

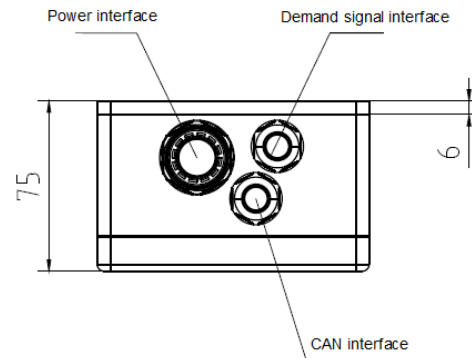
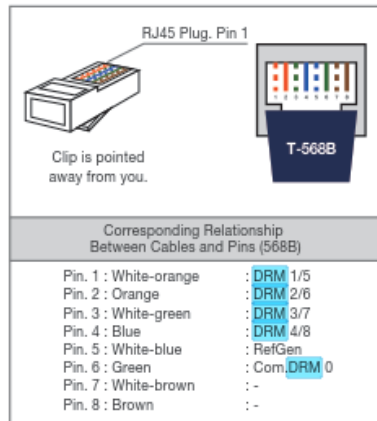
The MINIES supports the DRM0 mode and is used in conjunction with the DRM0 combination switch. DRM0 can be configured through a third-party debugging tool. The below debugging tool Modbus Slave is used as an example

MINIES disables DRM0 mode by default. If you need to switch it on, you can use the third-party debugging tool to set the register of DRM0 address. The default address is 128. After turning on DRM0 mode, the combination switch (as shown below) is connected to the rear panel of ESS through standard RJ45 network cable, The "DRM" interface is ready to use.

The MINIES supports the DRM function as specified in AS4777.2.2015. The terminal block inside the MINIES is used for connecting to a demand response enabling device (DRED).

The DRED asserts DRMs, The MINIES detects and initiates a response to all supported demand response commands within 2s. The following table lists the DRMs supported by the MINIES. (DRM3 and DRM7 will supply or skin reactive power)

DRM0	The MINIES is in the state of "Key-stop"
DRM1	The import power from the grid is 0.
DRM2	The import power from the grid is no more than 50% of the rated power.
DRM3	The import power from the grid is no more than 75% of the rated power.
DRM4	The import power from the grid is no more than 100% of the rated power. but subject to the constrains from other active DRMs
DRM5	The export power from the grid is 0.
DRM6	The export power from the grid is no more than 50% of the rated power.
DRM7	The export power from the grid is no more than 75% of the rated power.
DRM8	The export power from the grid is no more than 100% of the rated power, but subject to the constrains from other active DRMs.



1.5 Standards and directives

MINI ES strictly complies with relevant standards and requirements which are shown below

Certification item	Standard
Safety	IEC/EN 62109-1/-2
	EN 62477-1
	AS 62040.1.1
EMC	IEC/EN 61000-6-3:2007+A1:2011
	EN 61000-6-2:2005
Grid connected	VDE AR N4105
	VDE V 0126-1-1
	AS 4777.2-2015
Battery	IEC 60730

1.6 About this manual

Declaration

- This manual is applicable to the MINI ES and instructs the operation and functions of product.
- The manual is applicable to transportation, assembling, installation and commissioning.
- This manual is intended to be used by the accredited installer.
- This manual contains important information. Please read this manual carefully before operating and servicing the MINI ES.
- Please strictly follow the manual instructions when operating the system, otherwise it may cause the product to fail or cause personnel casualty or property loss.
- This manual shall be stored and safely be accessible on site to the installer and service technician at any time.

Alarm signs

Please keep several types of safety alarm signs in mind. Familiarize yourself with the messages and the importance of the various signals as explained.

Warning instructions identify safety information, which consists of the following:

- Warning sign
- Instructions to denote the level of risk
- Details of the nature and source of the risk
- Details of the potential risk if the warning instructions are disregarded
- Risk management to prevent the danger or personnel casualty or material damage
- The warning instructions are defined according to the following level of hazards



DANGER!

Denotes an extraordinarily hazardous situation

This warning symbol indicates an immediate danger, which can lead to severe injury or death.



WARNING!

Denotes a very dangerous situation

This warning symbol indicates a potentially dangerous situation, which could lead to severe injury or death.



CAUTION!

Denotes a dangerous situation

This warning symbol indicates a potentially dangerous situation, which could lead to minor injury.



NOTICE!

Denotes a risk of material damage

This warning symbol indicates a situation that could lead to material damage.

1.7 Abbreviations

Abbreviation	Description
APP	Application software
CT	Current transducer

1.8 Attached list

Tool list

No.	Tool name	Tool type	Functions
1	Stanley knife		
2	Phillips head screwdriver		
3	Flat-bladed screwdriver		
4	Small flat-bladed screwdriver	1mm	CT terminal
5	Sleeve and loop bar	M14	Fix anchor bolts
6	Electric drill and drill bit	NO.10 drill	Punch anchor bolts
7	Hammer		
8	Long-nose pliers	5 inches	
9	Wire strippers	Standard	
10	Wire crimpers		
11	Crimping modular plier	RJ45	
12	Multi-meter	Standard	
13	Adjustable wrench		
14	Scissors		
15	Tape		
16	Other auxiliary tools that might be used (for example: Insulating gloves, insulating shoes, insulating tape, etc.)		All installation process

1.9 Specification

Parameters	MINIES-P30B3-AU-R2
On-grid Parameters	
Nominal Voltage	240V AC/1Phase
Maximum Discharge Current	13A
Nominal Frequency	50HZ
Maximum Power	3KVA
Total Harmonic Distortion	<5%

Parameters	MINIES-P30B3-AU-R2
Island detection	Auto Test, AFD
Max. grid port short-circuit fault current	980us,390A peak, 92.28Ar.m.s
Max.inrush current	0A
Off-grid Parameters	
Nominal Voltage	230V AC/1Phase
Nominal Current	8.6A
Maximum Discharge Current	16A (5s protection)
Nominal Power	2KVA
Nominal Frequency	50Hz
Max.output short current	1.17ms,400A peak, 93.53Ar.m.s
Off-grid Protection	2KVA-2.2KVA overload:15min protection; 2.2KVA-3KVA overload: 1min protection; 3KVA-4KVA overload:5s protection;
Battery Parameters	
Nominal Voltage(Range)	51.2V (44.8VDC-57.6VDC)
Battery Type	Lithium iron phosphate battery (LiFePO4)
Battery Usable Capacity	>3KWh
Max discharge current power	3.7KW
Max discharge current	65A
Max charge current power	3.7KW
Max charge current	65A
Other Parameters	
Topology	Isolated
Wet location	No
Protective class	Class I
Pollution grade	II
Product Size	680mm (W)×256mm (D)×610mm (H)
Weight(Net Weight)	96kg
Operation Humidity	5%~95%
IP Grade	IP32 (recommended indoor use)
Noise	<45dB
Nominal Operation Altitude	<2000m
Cooling Mode	Fan cooling
Communication Interface (function)	RS485*1/Ethernet (RJ45) *1/Instrument transducer (CT) Sampling port *3
Operation Temperature	0°C~40°C
Storage Temperature	-10°C~40°C
Recommended Operation Environment	Indoor (No condensation, icing, direct sunlight)

2. Safety Requirements

2.1 Responsibilities of the installer

The installer must ensure that:

- The safety protection equipment of the system is fully functioning
- Any unclear warning and safety signage on the device should be replaced immediately
- Make sure there is no flammable items are placed near the device
- The device shouldn't be covered at any time
- The device is required to be placed on a surface that can support the full weight of the unit
- Transportation, assembling, installation and commissioning of the device shall be carried out by authorized personnel only
- Transportation, assembling, installation and commissioning of the device shall be carried out only under the specified conditions
- The authorized installer shall be capable of evaluating the potential risk
- Only authorized and trained electricians can perform installation, commissioning, and change the settings and connect to the Router
- Before installation and operation, any potential hazards shall be identified and the necessary risk management should be applied onsite.
- This manual and safety instructions should be read and understood by the installer before starting installation
- It is not allowed to change the software, housing and components of the device without the manufacturer's approval. Otherwise, the liability and warranty will be invalid.
- It is not allowed to open the unit except by authorized and trained electricians. If the seal is broken due to unauthorized modification of the components, the warranty will be invalid.

2.2 Battery Maintenance

- When the device is not used for a long time, discharge the battery to between 45% and 60% of the battery capacity, and disconnect the battery output to avoid the battery power being emptied;
- When the device is not used for a long time, it is recommended to charge the battery once every six months to ensure that the battery can work normally.
- Ensure reliable grounding.
- Battery maintenance must be carried out by professionals or under their direction;
- When replacing the battery, use the same type and number of batteries or battery packs;
- Warning: Do not throw the battery into a fire. The battery may explode;
- Warning: Do not open or damage the battery. The electrolyte flowing out of the battery is harmful to the skin and eyes. The electrolyte may also be toxic;
- Warning: The battery may cause a shock hazard and a large short-circuit current. When handling the battery, pay attention to the following aspects:
 - a) Remove watches, rings and other metal products;
 - b) Use a tool with an insulated handle;
 - c) Wear rubber gloves and shoes;

- d) Do not place tools or metal parts on the battery;
- e) Disconnect the charging power supply before disassembling the battery terminal block;
- f) Pay attention to whether the battery is inadvertently grounded. If you find that the battery has been accidentally grounded, remove the power supply from the ground. Touching any part of the grounded battery can cause an electric shock. Disconnecting ground during installation and maintenance reduces the probability of electric shock (applicable to equipment without a grounded power supply and remote battery power).
- g) Do not touch the battery pack with wet hands.
- h) Do not crush, drop or puncture the battery.
- i) Always dispose of the batteries according to local safety regulations.
- j) Store and recharge battery in a manner in accordance with this user manual.
- k) The charging circuit of inverter shall be DVC A, and the output circuit needs to be isolated from high voltage bus.
- l) Do not reverse battery polarity
- m) When storing or transporting the battery, do not stack the battery without protective packaging
- n) Packaged batteries should not be stacked more than specified number stipulated on the package.

All operators of the energy storage system shall follow the user manual, installation and service manuals and quality guarantee. Any damage to equipment caused by ignoring and misreading the user manual, installation and service manuals and quality guarantee will invalidate the product warranty.

2.2 Qualified electrician

➤ Qualification

A qualified electrician is a person who possesses the required knowledge, technical training and experience, to conduct the following:

- Setting up, activating, deactivating, disconnecting, grounding, short-circuiting and repairing electrical circuits and devices.
- Standard maintenance and use of protective devices defined in the safety standards.
- Administering first-aid to injured parties.
- Compliance with local regulations, applicable standards and directives.

➤ Responsibilities

The electrician shall ensure that:

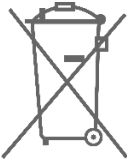
- The general information, step-by-step instructions and the safety instructions regarding assembling and installation are read and followed all the time.
- Neither the physical size nor the rated current value of fuses can be changed
- Before performing any electrical work, suitable measuring equipment shall be used to ensure the device is in accordance with applicable directives
- Do not open the device during operation

2.3 Requirements for the installation location

Always select a suitable location before installation. You shall ensure that the installation location meets the following conditions:

- Sufficient ventilation and dry environment (max humidity is 95%)
 - The range of room temperature is 0°C ~ + 40°C
 - Protected against penetrating water
 - Always install away from highly flammable (e.g. paper) or explosive materials (e.g. fuel, paint)
 - Mounting surface shall be capable for supporting the total weight of the device: 96kg (3kWh system)
 - Minimum clearance from the wall (15 cm)
 - Keep the distribution board at a reasonable distance from the MINI ES system installation. Only 10m connection cable is provided for each CT. Cable extension requires extra cost, maximum cable extension is 10 meters
- **Access authority**
- Children shall be accompanied by an adult if they are in the installation room
 - Children shall not operate the storage system

2.4 Safety signs on the device

Item	Description
	Be aware of dangerous voltage/ electric shock
	ISO 7000-1641
	The product should not be disposed of together with household waste at the end of its life. Please send it to a proper institution for recycle and reuse
	Point of connection for grounding protection
	Hot surface

Item	Description
	IEC 60417-5019(2011-01)
	IEC 60147-5018(2011-01)
	Pass CE authentication

2.5 Safety equipment

The electrician must install the following safety equipment:

Leakage current circuit breaker (Detailed specifications please refer to installation content)

- Specifically refer to the installation guide.

There shall be an earth leakage protection device for each final sub-circuit of customer.



CAUTION!

Leakage protection

According to different countries and areas, choose appropriate current leakage protection breaker.

2.6 Basic safety information

This chapter contains the basic safety instructions. Fail to follow the safety instructions in this manual can lead to accidents which can cause serious injury and/or death, as well as serious components damage.

Risk of fatal injury: General



DANGER!

Risk of fatal injury due to lack of assistance

In the event of an accident a second person can switch off the power supply and provide assistance.

- Only a secondAry installer is presented could start work.



DANGER!

Due to disregard of safety instructions

If the safety instructions and/or installation manual are not followed , the product may be damaged permanently and it may cause electrical accidents with serious consequences.

- Follow the safety instructions

Risk of fatal injury: Inverter



DANGER!

Risk of fatal injury from arcing

Arcing may occur in the event of faults or if fuses and plugs are not properly connected.

- Always use components in accordance with the instructions of the respective manual



DANGER!

Risk of fatal injury due to residual voltages

The inverter capacitors may still discharge even after the device is switched off.

- Ensure external and internal switches are disconnected.
- After switching off the device, always wait for 10 minutes before directly contact with the unit.
- Use a certified multimeter to check if the device is still energized in accordance with applicable guidelines

Risk of fatal injury: Battery



DANGER!

Risk of injury due to electric shock

Batteries can generate significant amounts of short-circuit current due to incorrect operation, which can cause electric shock and lead to serious injury and/or death.

- While working with batteries, always remove watches, rings and other metal equipments.
- Only use tools that have insulated handles
- Do not place or store tools or other metal objects on the batteries
- Always disconnect the charging and discharging source first before working on the battery connections
- Reconnect the unit only after comprehensive check of all connections and terminals, make sure the wiring is correct.



DANGER!

Risk of explosion due to using incompatible battery types

If other battery types not approved for the device are used, the existing and new adding batteries may explode.

- Only use the batteries that have been approved by manufacturer.
- Check with the manufacturer before installation.

Risk of injury General



WARNING!

Risk of injury due to unauthorized installation

Installation and commissioning of this storage system requires BYD authorized training and relevant accreditation.

- Installation, cabling and commissioning must only be carried out by authorized, trained electricians.
- The device operating temperature may reach up to 100°C, don't touch the hot surface.



WARNING!

Risk of injury due to heavy weight

The heavy weight of components may cause injury during installation, disassembling, transportation.

- Transportation and installation requires a minimum of two people.
- Transport the device with appropriate lifting equipment.



WARNING!

Risk of injury due to incorrect installation procedure

If the sequence specified in the instructions is not followed during the installation of the components, this can cause injury or material damage.

- Read the installation manual carefully and follow the installation procedure.



WARNING!

Risk of injury due to sharp edges

The components have sharp edges, which can cause injury if they are not handled carefully.

- Wear protective equipment.
- Install the system with a minimum of two people.



WARNING!

Risk of incorrect use of the batteries

Eye and skin injuries can be caused by opening or damaging the batteries.

Never open or damage the batteries

- Do not short-circuit the batteries
- Do not reverse the polarity of the batteries
- Do not overcharge the batteries

2.7 Other safety instructions



WARNING!

- Do not climbing on equipment and place accessories on or inside the device.
- Do not disassemble, reconstruct, repair equipment without the manufacture permission .
- Do not allow any non-professional to do maintenance for internal electrical equipment . When maintenance is needed, please contact the authorized provider.
- Do not block the ventilation of the device .
- Do not put any objects inside the system.
- Do not touch, pull or cut off the internal cable come from the device.
- Do not place heat sources near the device (such as electric furnace and other heating equipment)
- Do not wipe the device with a damp cloth or chemicals (such as diluent)
- Do not pull the power cable of the device.
- Do not operate with wet hand, wet cloth.
- Do not set the device closed to the high frequency machine, the wireless machine , the radio, television or the electrical equipment with disturb signal.
- Do not apply heavy impact or tilt the device.
- Do not spray any liquid on equipment.
- Do not install the device in where full of electrostatic or noise.
- The essential loads will experience a short period blackout (less than 5 seconds) when grid drop off before MINIES supply power.
- Do not make medical equipment as essential loads because MINIES is not UPS device.
- Do not attempt to repair or remove the device if the device or parts are damaged , please consult local supplier.



NOTICE!

- Do not directly install the device at severe weather condition.
- Do not use the device for medical equipment.
- If equipment is deformed, broken or appears abnormal sounds or smell, please contact with the authorized service provider immediately.
- If equipment is faulty or do not operate normally, please contact with the authorized service provider right away.
- Keep minimum space for inspection and service.
- Please contact with BYD authorized provider if regular maintenance is needed.
- Please keep the system fully charged if prepare to leave the device unused for a long time.
- Please contact with BYD authorized service provider when the device needs to be relocated.
- This equipment is allowed to be installed indoors only, please do not install outdoors.
- This product is allowed to be used in Australian area. If there are any other special requirements, please contact with the manufacturer for prior approval.

3. Technical Description

3.1 Scope of supply

After unpacking the storage system, you must check the scope of delivery. If components are missing or damaged, contact with the manufacturer right away. The following components are included as standard in the scope of delivery:

Number	Item	Quantity
1	MINI ES	1
2	CT	2
3	User Manual	1
4	Factory Inspection Report	1
5	Certificate of Qualification	1
6	DRED	1

3.2 Nameplate introduction

The Mini ES is fitted with a nameplate on its front left housing. This nameplate is engraved with important parameters related to the system. Please protect it carefully in the process of transportation, installation, maintenance and overhaul. Do not damage or remove the nameplate.

MINIES		
Product Type:		
MINIES-P30B3-AU-R2		
Production Time:		Series Number:
		Mon/Year
On Grid Parameter	Nominal Voltage: 240Va.c/1phase	
	Nominal Frequency: 50Hz	
	Max. Output Current:13Aa.c	
	On-grid Power: Max.3KVA	
	Power Factor Range: >0.99	
Off Grid Parameter	Nominal Voltage: 230Va.c/1phase	
	Nominal Frequency: 50Hz	
	Nominal Current:8.6Aa.c	
	Max. Off-grid output current:13Aa.c	
	Nominal Power:2KVA	
Battery Parameter	Nominal Voltage:51.2Vd.c	
	Working Voltage Range:44.8Vd.c~57.6Vd.c	
	Max.Continuous Current:65Ad.c	
	Battery Type:LiFePO ₄	
	Battery Capacity: 3KWh	
Condition	Operation Temperature: 0℃~40℃	
	Storage Temperature: -10℃~40℃	
	Protection Class: IP32 (Recommended Indoor)	
Size	680mm (W) ×256mm (D) ×610mm (H)	
Weight	96kg	
Ingress Protection	IP32(Recommended Indoor)	
Protection Class	I	
Inverter topology	Isolated	
*During operation, don't put system in direct sunshine, condensation / snow environment.		
* More parameter is in user manual.		
Manufacture: BYD Auto Industry Company Limited		
Telephone: +86-755-8988 8888		
Fax: +86-755-8993 7043		
Website: Http: //www.byd.com		
     		

figure3. Nameplate

3.3 System overview

Neutral cable of alternative supply must not be isolated or switched.

- For AU/NZ

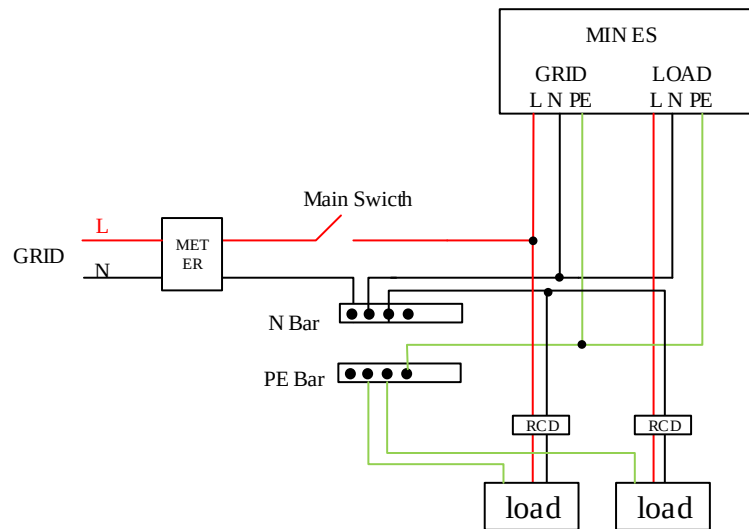


figure4. Electrical distribution diagram

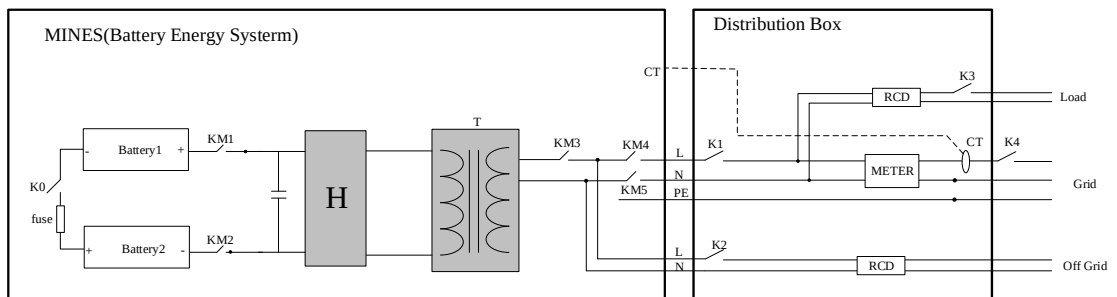


figure5. Electrical block diagram

Note:

- 1、K0、K01 is battery switch,K1 is grid-connected switch,K2 is major load switch,K3 is load switch,K4 is total grid switch.
- 2、Add a RCD in OFF-GRID port and GRID port to avoid that leakage of electrical equipment endangers human safety.

3.4 Overview of functions

The MINI ES operates in several working conditions depending on the system status:

Sunny & sufficient lighting. PV's power supplies electric appliances and excess power can be stored in MINI ES or sold to the grid.

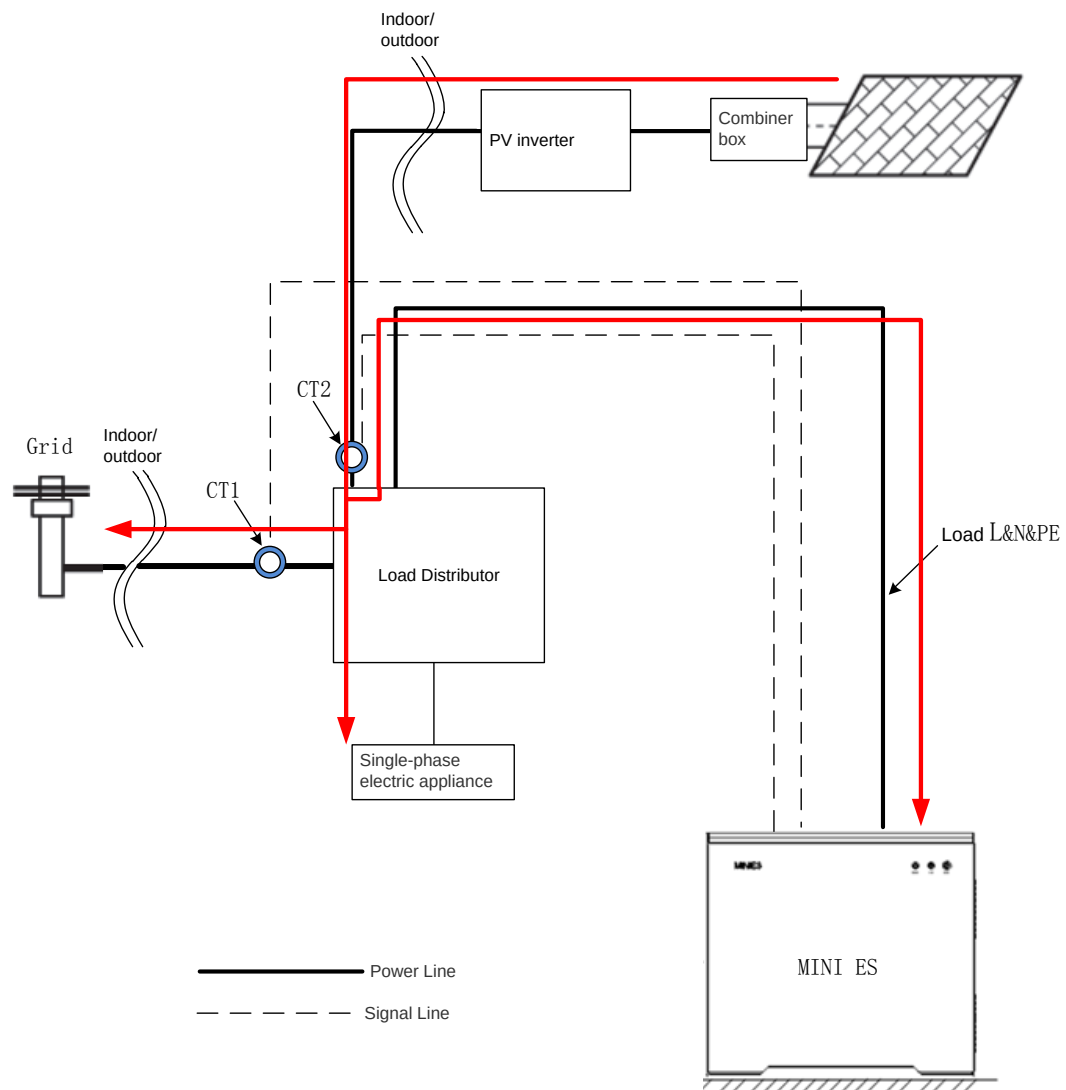


figure6. Power flow diagram

2. No lighting & sufficient SOC. MINI ES provides electricity to electric appliances.

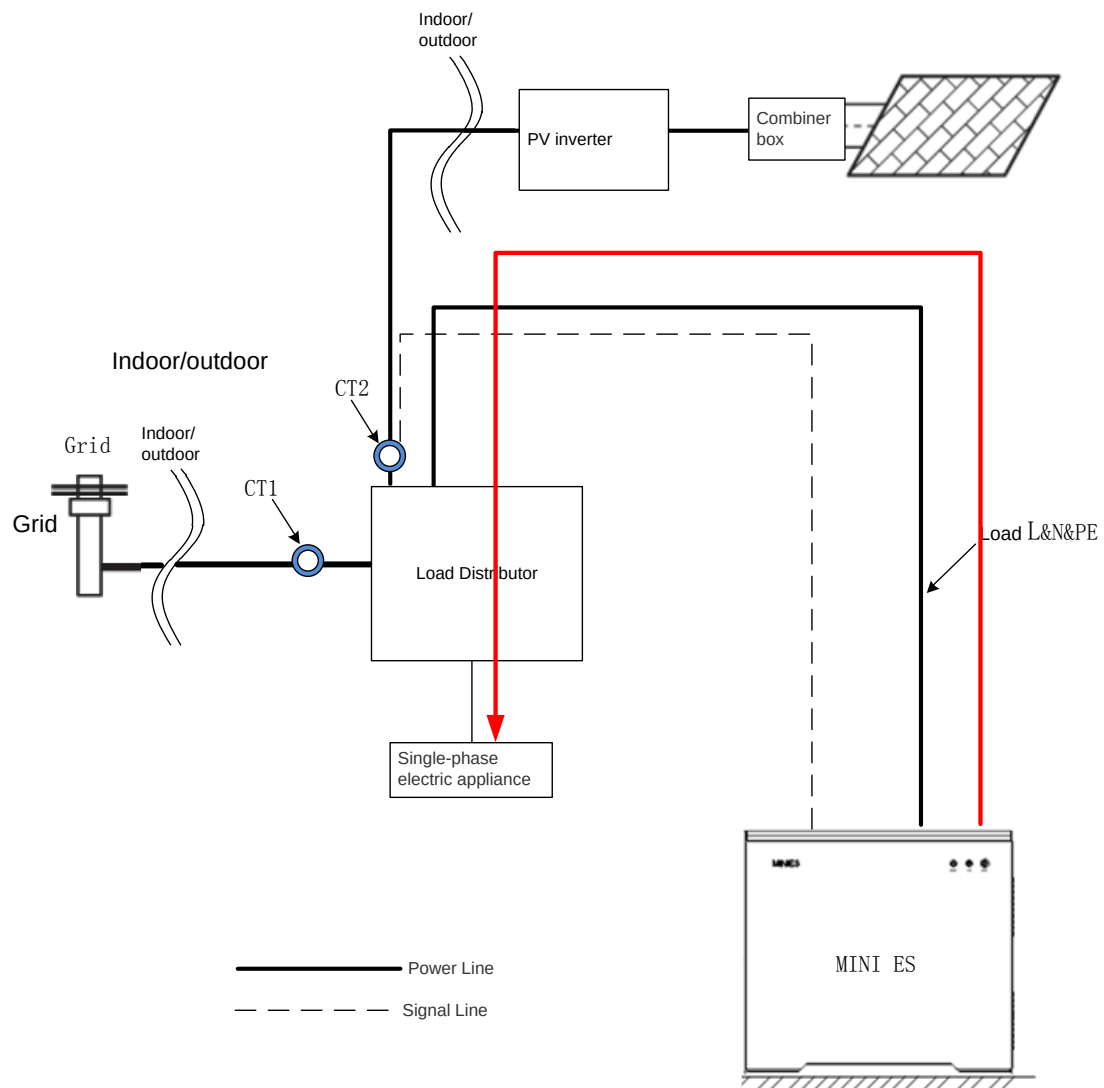


figure7. Power flow diagram

3. No lighting & insufficient SOC. Power grid provides electricity to electric appliances.

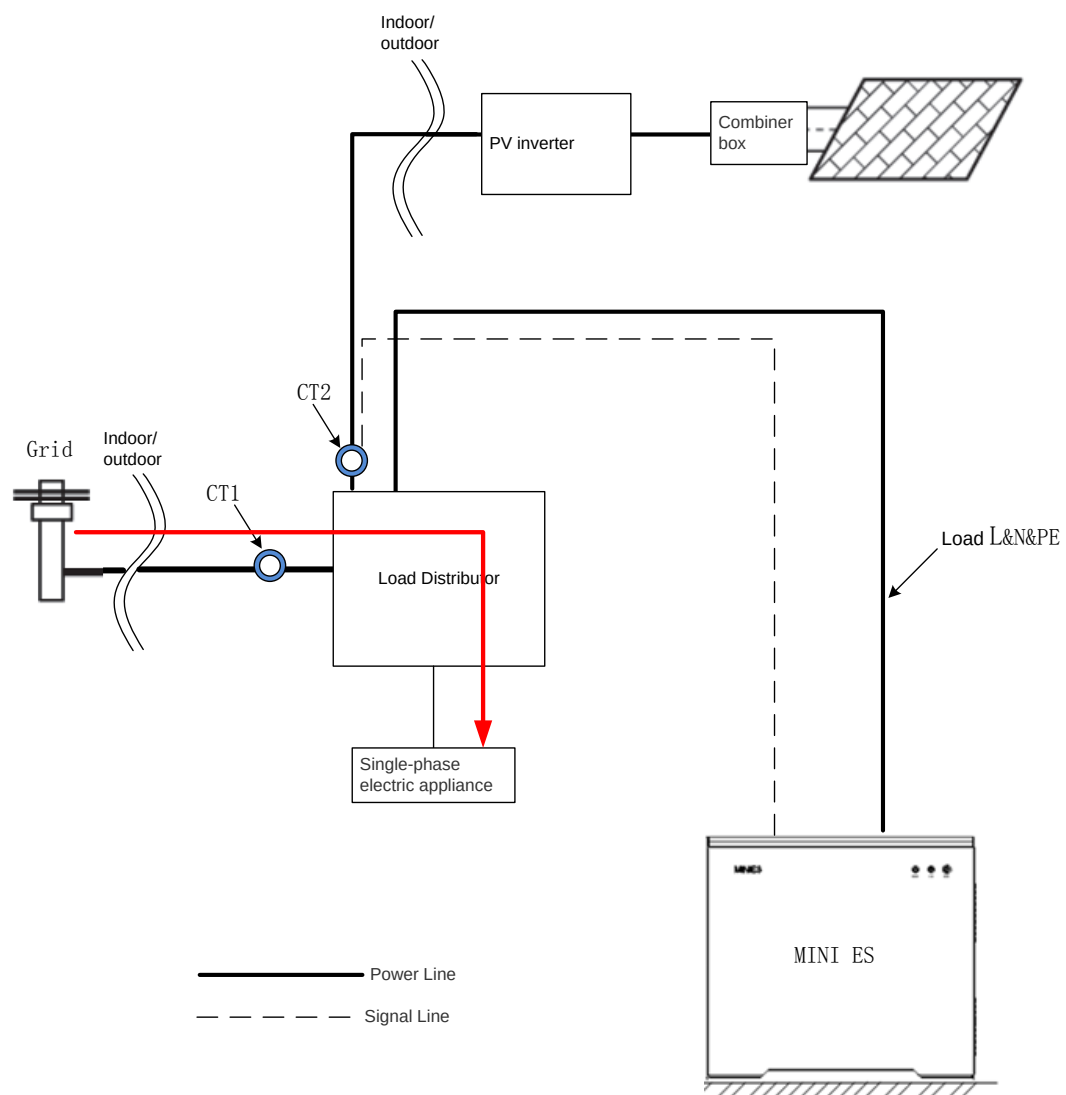


figure8. Power flow diagram



Notice!

If it keeps continuous cloudy days and MINI ES couldn't get the energy from the PV, MINI ES would do the protective charging and use 0.15~0.2kWh energy from grid for each time.

4. During a blackout, the MINI ES will automatically provide electricity for the house essential loads, with a total power of 2KVA. This function is just for emergency.

- When power of electric appliances exceeds the 2kVA, the MINI ES will self-protect, and stop power output.
- MINI ES is not suitable for high-power and surge devices but low-power devices like mobile phone, computers and general lighting.

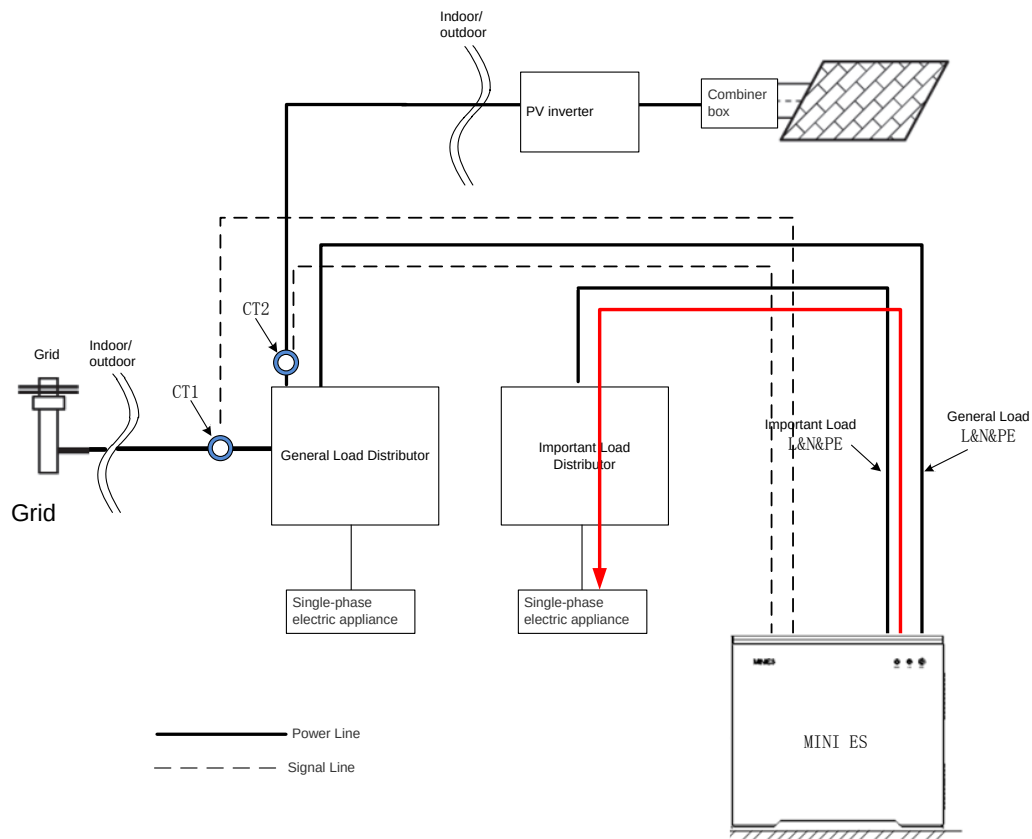


figure9. Power flow diagram

3.5 Product Introduction

➤ Product Appearance



figure10.Front view



figure9. Back view

➤ Product dimensions

The Mini ES is 680 mm long, 257 mm wide, 610mm high, and weighs 96KG.

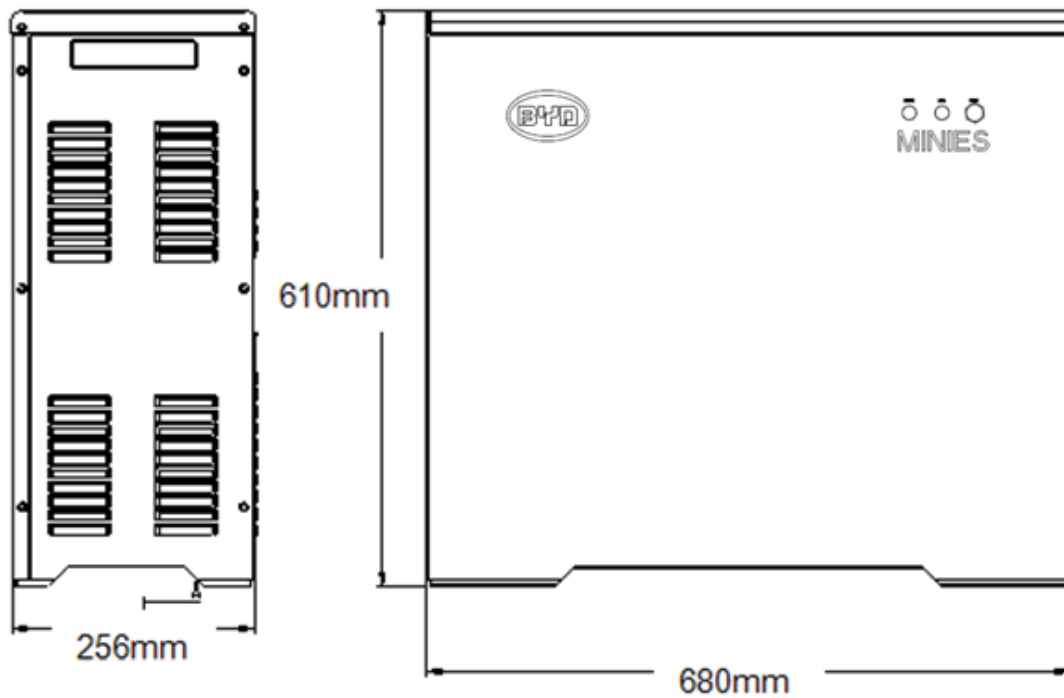


figure11. Dimensional drawing

➤ Product Interface

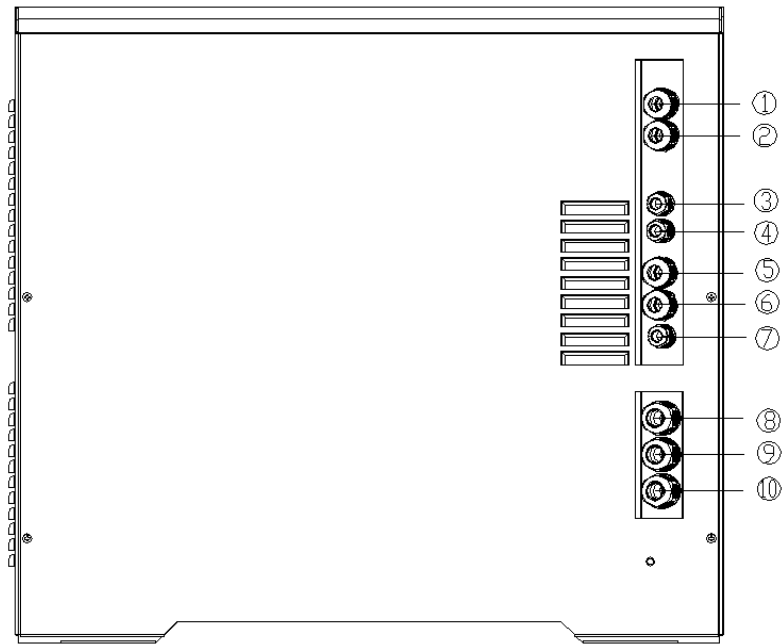


figure12. Bonding hole description

No.	Item	Remark
①	DC+	Reserved (BYD authorized products can access)
②	DC-	Reserved (BYD authorized products can access)
③	12V POWER	Reserved (Prohibition of use)
④	RS485	Meter correspondence interface
⑤	CAN	Reserved (BYD authorized products can access) or DRED controller communication inlet
⑥	LAN	Network line interface
⑦	CT1-CT3	CT interface (2)
⑧	GRID	Grid cable inlet
⑨	LOAD	Load cable inlet
⑩	PV INVENTER	Reserved (Prohibition of use)

figure4. Bonding holes description



WARNING!

- All these interfaces shall be connected by a qualified electrician. Any external device connected to MINI ES shall be authorised by BYD Company. BYD does not assume liability and warranty for any problem or damage caused by unauthorized external devices.
- Please refer to installation manual for correct method of installation.

3.6 Product button introduction

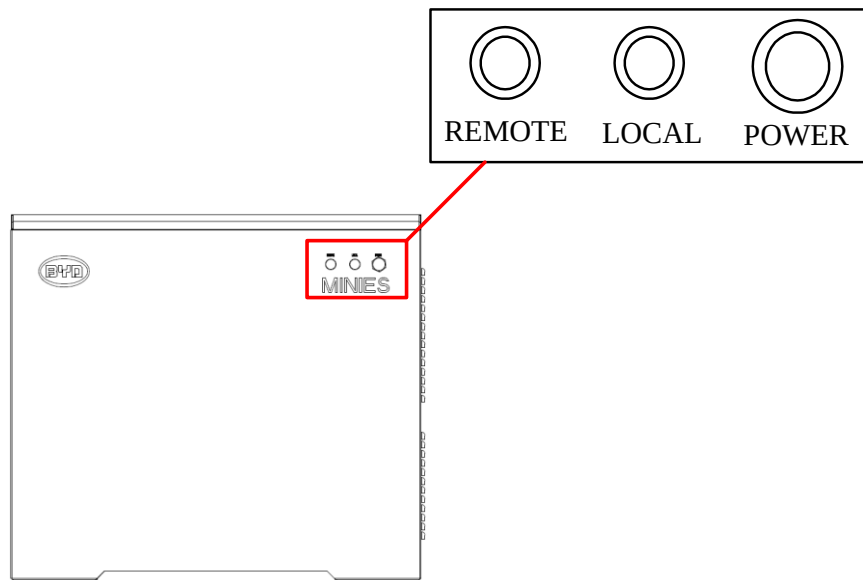


figure13. MINI ES Button schematic diagram

POWER: Power-on and power-off button

LOCAL: Local control button

REMOTE: Remote control button

➤ Power-on Function

Procedure: hold "POWER" button for 10s. When "POWER" indicator or both "LOCAL" and "POWER" indicator keeps on, MINI ES is operating.

- During the power-on process, MINI ES will do the self-inspection, at this moment all of "POWER"、"LOCAL" and "REMOTE" indicators will keep on, it is a normal phenomenon. This self-inspection will last 1-2 minutes.

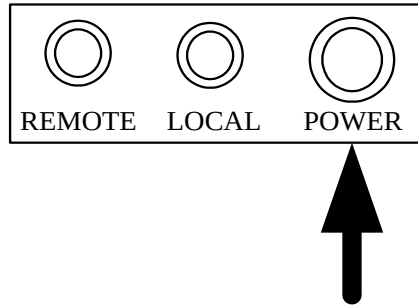


figure14. Hold the POWER button

DANGER!

Risk of electric shock

As long as MINI ES is in power-on state, the load distributor will keep energized.

- Only after completing the installation and commissioning can user start up MINI ES.

➤ **Power-off Function**

Procedure: hold "POWER" button for 10s. When "POWER" indicator turn off, MINI ES stop operating.

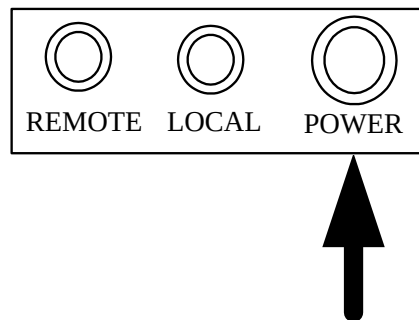


figure15. hold the POWER button

➤ **Local Control Function**

The MINI ES can be set up as "remote" mode and "local control" mode through holding the corresponding button. Local control is the default system mode and remote control is designed for the authorized installer.

- Procedure: hold "LOCAL" button for 10s. When "POWER" and "LOCAL" indicator keep on, local control mode starts.

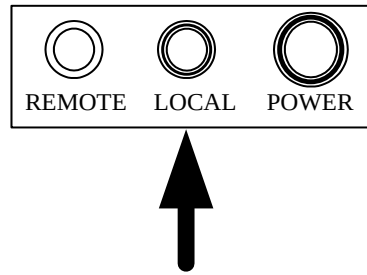


figure16. Local control schematic diagram

➤ Remote Control Function

- Procedure: hold "REMOTE" button for 10s. When "POWER" and "REMOTE" indicator keep on, remote control mode starts.

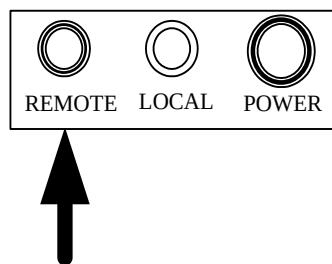


figure17. Remote control schematic diagram

➤ Mandatory Charging Function

Procedure: hold both "LOCAL" and "REMOTE" buttons at the same time for 10s. When "LOCAL", "REMOTE" indicators keep on, mandatory charging mode starts.

Only when the system is at local control mode could this function work.

- When entering mandatory or forced charging mode, MINI ES will automatically charge the battery.
- When the battery has been fully charged, the MINI ES will shut down automatically.

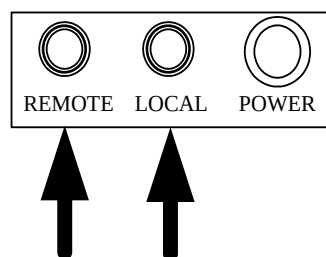


figure18. Mandatory charging schematic diagram



NOTICE!

When MINI ES is performing the required mode, according to the button sequence all other operations are invalid.
Only after completing the installation can start the system.



NOTICE!

If it has been 6 months since the product was unused or the user doesn't operate the product as the following requirements, it may causes the batteries over-discharged and such condition may causes batteries broken and it is not contained in warranty.

◆Please complete “mandatory charging” before user plans to leave the product unused for a long period. Don't leave the product unused over 6 months after the product is full-charged.

◆Do not leave the product unused over 1 month after product shuts down automatically due to it doesn't connect to the grid and low SOC.

4. Monitoring instruction

When the MINI ES is connected to the Internet, operation status and operating information can be checked on the app or BYD monitoring website.

4.1 How to install APP

The customer can also check the operating information of MINI ES system according to mobile APP. After registration is complete, the customer can use the username and password. The download path is shown as below:

- **Android phone user:**



Download the APP by searching “BYD” on “Google play”.

- **IOS phone user:**



Download APP by searching “BYD” on the APP store.

- After downloading, then install APP.



NOTICE!

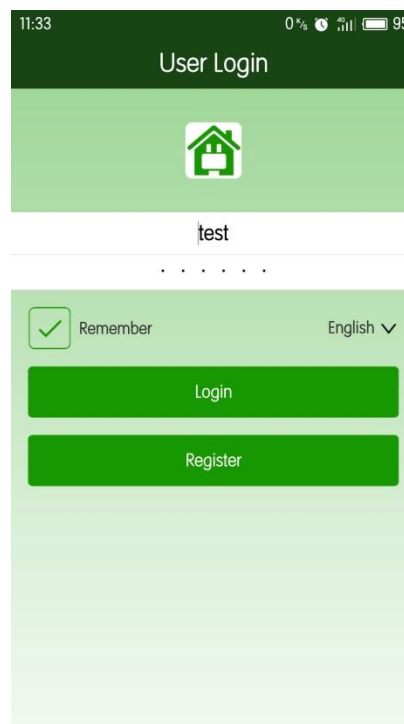
The App searches on the server for the Operating information of corresponding energy storage system .

- Ensure the MINI ES has been connected to the router.
- The data shown in the APP is not the real time data, the server will refresh the data every 15 minutes.

4.2 Register an account on APP

The user shall register the account if the user use this APP for the first time. The specific steps are as below:

1. Open the APP
2. Click register



3. Fill out the required information and submit.

11:33 0% 95

Register an account

User Name: 3~20 letters or numbers *

True Name: Your true name

Email: Correct email *

Serial No.: Correct serial No. *

Company: Your company

Department: Your department

Phone number: Your phone number

Password: 6~18 letters or numbers *

Confirm: Input password again *

Register Back

Notice:

- Items marked with (*) are required.
- Item "Product serial number" is the number shown on the nameplate.
- This user name only applies to APP.
- For Australia and New Zealand, different grid parameters are configured according to the order when the product is factory set.

4.3 Register account on the website

Open your WEB browser, input the website:

<https://asset-management-webstation.azurewebsites.net/en/Account/Login>.

You should see the below web-page.

EMSSADMIN Login

User Name: The Username field is required.

Password:

Validate code: 1 2 3 4 5 6

☐ Remember Me?

Login

[Register a new account](#) | [Forgot password?](#) [中文](#) [English](#)

© 2019 - BYD Company Limited. All rights reserved. Version v001.0

5. Daily Maintenance Methods

5.1 Common faults

Common faults	Operation methods
MINI ES can't start	Please check the battery circuit breaker closed or not (licensed technician required).
MINI ES has no power output	Please check batteries state of charge via APP, it might be too low.
MINI ES shuts down automatically	MINI ES has low SOC% and the system is at the off-grid mode at this moment and when the grid and PV recover, the system will reboot automatically.
Essential load can't work normally	Please check the important load distribution board circuit breaker. Please check the essential load rating to determine if it exceeds 2kVA or not. Please check the state of charge.
APP can't read data	Please check the network connections of product.
The MINI ES sends power to the grid	Please contact your service agent.
Wrong PV data	the data is not real time CT has an error.
"POWER" 、"LOCAL" and "REMOTE" keep on at the same time.	If the product is unable to recover, please contact the supplier or local service center.

Adress	Meaning	Processing method
3007	bit3: Battery over voltage protection	Replacement battery
	bit5: Battery under voltage protection	Replacement battery
	bit6: Battery sampling disconnection	Replacement battery or BMS control board
	bit8: Abnormal battery temperature sampling	Replacement battery or BMS control board
3008	bit0: Battery over temperature protection	Use after the temperature is lowered
	bit2: Battery leakage protection	Stop using and check if the case is deformed
2012	bit12:PCS fan failure	Replacement fan

	bit14:PCS relay failure	Replacement PCS
	bit15:Grid relay failure	Replacement PCS
2013	bit0:Control panel over temperature	
	bit2:Capacitance over temperature	
	bit3:heat sink over temperature	
	bit4:Transformer over temperature	

5.2 Display status query table of panel button indicating lamps

System status	System operate status	Diagram
System off	If the grid and PV is normal,but the system shut down automatically, please contact with the local service supplier.	
Standby	The system has been fully charged/ discharged .	
System is charging or discharging at the on-grid mode	The system is working noramlly	
System is discharging at the off-grid mode	If the grid is normal at this moment, please contact with the local service supplier.	
System works normally and on the remote control mode.(default)	The system is working noramlly	
Mandatory (or force) charging mode	The system is charging by grid,	
System fault	Please contact with local service supplier when this issue happens.	

5.3 Routine maintenance

1. Do not block the product inlet / outlet. The inlet and outlets should be cleaned every six (6) months.
2. When the product is likely to sit idle, please ensure that the product has sufficient battery power. (Via hold "LOCAL" and "REMOTE" 2 buttons for charging the battery. Once fully charged, the product will automatically shut down. Then turn off the power grid connecting

to the MINI ES).

3. It is good for MINI ES to be fully charged every six months to protect battery life if it is in storage for long periods.

6. About BYD

For any assistance about BYD product, please contact BYD by:

Electric Power Research Institute

BYD Auto Industry Company Limited

NO.3009, BYD Road, Pingshan, Shenzhen, 518118, P.R.China

Tel:+86 0755-89888888 - 57860